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(54) **Control system and method for turbocharged internal combustion engines**

(57) A control system for governing turbocharged internal combustion engines including an electronic control unit (10), a fuel flow control valve (38), and engine speed sensor (50), and a bypass valve (30) to control exhaust gas flow through an exhaust bypass conduit (29). When engine speed is above a first predetermined engine speed, the electronic control unit (10) controls the bypass valve (30) to regulate exhaust gas flow

through the bypass conduit (28), thereby limiting exhaust gas flow through the turbocharger (12). When the engine speed reaches a second, predetermined engine speed value that is higher than the first predetermined engine value, the electronic control unit (10) completely opens the bypass valve (30) allowing virtually total bypass of the turbocharger (12), and limits fuel flow to the engine by controlling the fuel flow control valve (38).

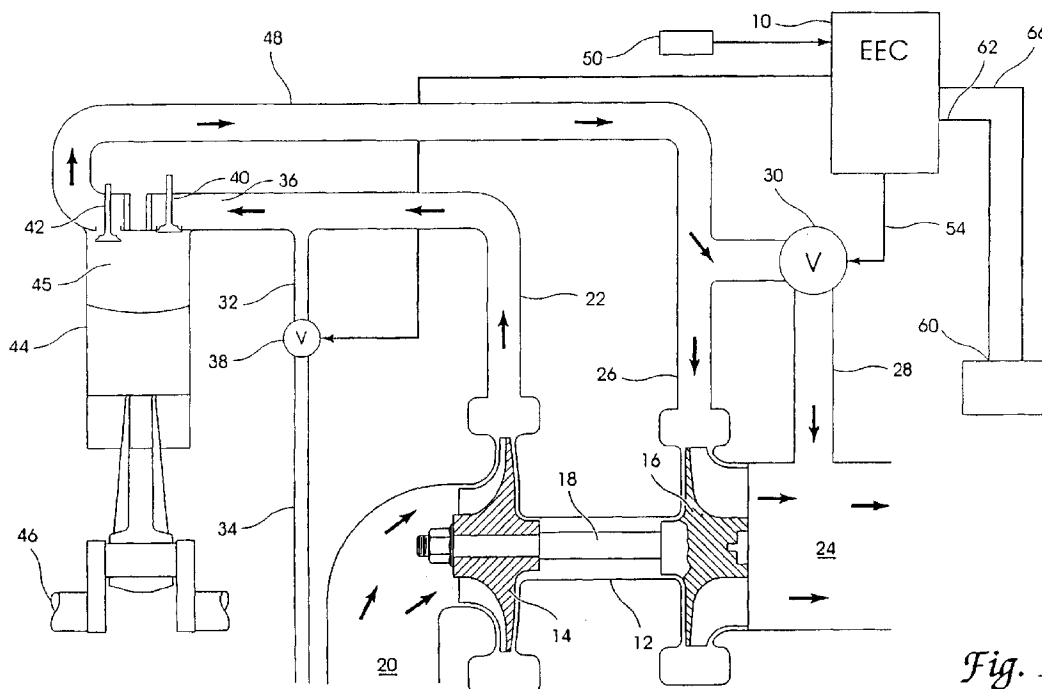


Fig. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 94 30 9295

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	US 4 802 456 A (OKANE YUKIHIRO ET AL) 7 February 1989 * the whole document * ---	1,3	F02B37/12 F02D23/00 F02D31/00 F02D33/00
A	US 4 633 670 A (IWASA YOSHIO) 6 January 1987 * the whole document * ---	1-4,6,8	
A	DE 33 44 819 A (BOSCH GMBH ROBERT) 13 June 1985 * the whole document * ---	1	
A	DE 33 19 025 A (BOSCH GMBH ROBERT) 29 November 1984 * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F02D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 3 March 1997	Examiner Moualed, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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